

BEST AVAILABLE COPY

Serial No. 09/918,438
Docket No. 234824/00

2

AMENDMENTS TO THE CLAIMS:

1. (Previously presented) A wavelength division multiplexing optical transmission method wherein n (n : 4 or a larger integer) input signal light channels are connected to be transmitted, said method comprising:

grouping transmittable n (n : 4 or a larger integer) input signal light channels into groups each having x channels (x : integer, $2 < x < n$); and

for each group, whenever one or more of said x input channels does not currently include an input signal to be transmitted in said channel, transmitting a control light having a same power level as a total power of signal lights of said one or more missing input signals.

2. (Previously presented) A wavelength division multiplexing optical transmission method according to Claim 1, wherein:

in case the number of currently-transmitted signal lights in one group is smaller than x , the total level of the currently-transmitted signal lights and the control light is equal to a total possible level of transmittable x pieces of signal lights in the group.

3. (Previously presented) A wavelength division multiplexing optical transmission method according to Claim 1, wherein:

an optical transmission line on which said signal light and said control light are propagated is preset so that a wavelength characteristic of said optical transmission line is flat as would be in a case that light acquired by multiplexing n pieces of signal lights is propagated.

Serial No. 09/918,438
Docket No. 234824/00

3

4. (Previously presented) A wavelength division multiplexing optical transmission method according to Claim 1, wherein:

a control light to be transmitted in each group has a same wavelength as that of a signal light last transmitted in the group if an input light signal were received in an input channel corresponding to said wavelength.

5. (Previously presented) A wavelength division multiplexing optical transmission method according to Claim 1, wherein:

the control light comprises a continuous wave (CW) light.

6. (Currently amended) A wavelength division multiplexing optical transmission method wherein there are n (n : 4 or a larger integer) input channels so that n pieces of signal lights can be transmitted if input light signals are present on each of said n input channels, said method comprising:

grouping said transmittable n (n : 4 or a larger integer) pieces of signal lights into groups each having x pieces (x : integer, $2 < x < n$); and

in each said group, means for transmitting a control light having a same power as a total power of signal lights that have not been received as input light signals to be transmitted in the group.

Serial No. 09/918,438
Docket No. 234824/00

4

7. (Previously presented) A wavelength division multiplexing optical transmission system wherein n (n : 4 or a larger integer) channels of signal lights can be transmitted, said system comprising:

n signal light transmitters that can respectively receive an input signal and transmit a signal light as an input light signal to be transmitted, wherein said n signal light transmitters are classified into groups, each said group comprised of x of said signal light transmitters;

a plurality of first optical multiplexers, each said first optical multiplexer provided with x (x : integer, $2 < x < n$) channels of signal light input ports from one of said groups, each said channel connected to an output of one of said n signal light transmitters;

an optical branching device associated with each said first optical multiplexer that branches light output from the first optical multiplexer;

a control light transmitter associated with each said first optical multiplexer that transmits a control light based upon a level of the branched light from the optical branching device, a wavelength of said control light corresponding to a wavelength of one of said x channels;

a second optical multiplexer that multiplexes light output from the first optical multiplexers;

an optical transmission line on which multiplexed light output from the second optical multiplexer is propagated;

an optical demultiplexer that demultiplexes the light transmitted via the optical transmission line into signal lights of respective different wavelengths; and

n optical receivers that receive the signal lights demultiplexed by the optical demultiplexer.

Serial No. 09/918,438
Docket No. 234824/00

5

8. (Previously presented) A wavelength division multiplexing optical transmission system according to Claim 7, wherein:

the control light transmitter outputs a control light of power equivalent to provide a total power level that would be present if all of said x channels had signal lights therein.

9. (Previously presented) A wavelength division multiplexing optical transmission system according to Claim 7, wherein:

a control light has a same wavelength as that of a signal light last transmitted from said x channels of signal light transmitters corresponding to the control light transmitter.

10. (Previously presented) A wavelength division multiplexing optical transmission system according to Claim 7, wherein:

the optical transmission line is regulated so that a wavelength characteristic on said optical transmission line is flat in a case in which multiplexed light acquired by multiplexing n channels of signal lights is propagated.

11. (Previously presented) A wavelength division multiplexing optical transmission system according to Claim 7, wherein:

multiplexed light output from the second optical multiplexer has a level at which a wavelength characteristic on said optical transmission line is flat.

12. (Canceled)

Serial No. 09/918,438
Docket No. 234824/00

6

13. (Previously presented) The method of claim 6, wherein, for each said group, said control light has a wavelength of an input channel that is last transmitted in said group.

14-16. (Canceled)

17. (Previously presented) An apparatus for wavelength division multiplexing optical transmission, said apparatus comprising:

n input signal ports, each associated with an input signal at a pre-set wavelength, n being an integer equal to or greater than 4, said n ports being separated into a plurality of groups, each said group having x channels respectively associated with x of said n input signal ports;

wherein, for each said group:

a first multiplexer receiving said x channels of said group and providing a multiplexed optical signal as an output thereof;

a control circuit branches off light in said multiplexed optical signal, measures said branched light, and provides a control light level signal; and

a control light generator generates a control light that compensates for any of said x channels that currently have no optical signal therein; and

a second multiplexer receiving an output of said first multiplexers of each said group and provides therefrom a multiplexed optical signal of said n channels for an optical transmission line.

Serial No. 09/918,438
Docket No. 234824/00

7

18. (Previously presented) The apparatus of claim 17, wherein said optical transmission line has been balanced in a wavelength characteristic that is flat when all said n channels have an optical signal currently being transmitted.

19. (Previously presented) The apparatus of claim 18, wherein a wavelength of each said control light corresponds to a wavelength of one of said n channels.

20. (Previously presented) The apparatus of claim 19, wherein said wavelength of each said control light has been pre-set within each said group.

**This Page is Inserted by IFW Indexing and Scanning
Operations and is not part of the Official Record**

BEST AVAILABLE IMAGES

Defective images within this document are accurate representations of the original documents submitted by the applicant.

Defects in the images include but are not limited to the items checked:

- ☐ BLACK BORDERS
- ☐ IMAGE CUT OFF AT TOP, BOTTOM OR SIDES
- ☐ FADED TEXT OR DRAWING
- ☐ BLURRED OR ILLEGIBLE TEXT OR DRAWING
- ☐ SKEWED/SLANTED IMAGES
- ☐ COLOR OR BLACK AND WHITE PHOTOGRAPHS
- ☐ GRAY SCALE DOCUMENTS
- ☒ LINES OR MARKS ON ORIGINAL DOCUMENT
- ☐ REFERENCE(S) OR EXHIBIT(S) SUBMITTED ARE POOR QUALITY
- ☐ OTHER: _____

IMAGES ARE BEST AVAILABLE COPY.

As rescanning these documents will not correct the image problems checked, please do not report these problems to the IFW Image Problem Mailbox.